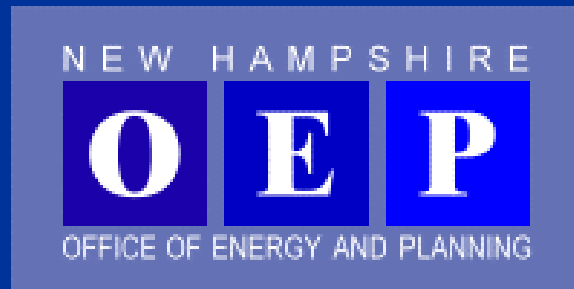




# Promoting Floodplain Management What Your Community Can Do

Jennifer Gilbert, CFM  
NH Assistant State NFIP Coordinator





# **Test Your Floodplain Knowledge**

# What Is the 100-Year Flood?

- A. A flood that occurs once every 100 years.
- B. A flood that has a 100 percent chance of occurring in any given year.
- C. A flood that has a 10 percent chance of occurring in any given year.
- D. A flood that has a 1 percent chance of occurring in any given year.

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# What is the Special Flood Hazard Area?

- A. Areas subject to the 100-Year and 500-Year Flood.
- B. Areas subject to just the 100-Year Flood.
- C. Areas subject to just the 500-Year Flood.
- D. The Coastal Flood Zone.

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**The only residents eligible to purchase flood insurance through the NFIP are those living in a participating community & within the floodplain**

A. True

B. False

**The only residents eligible to purchase flood insurance through the NFIP are those living in a participating community & within the floodplain**

A. True

B. False

All residents in a participating community are eligible to purchase NFIP flood insurance.



**If your home is located within a SFHA, what is % chance that your home will be damaged by a flood during the course of a 30-year mortgage?**

A. 8%

B. 15%

C. 26%

D. 33%

**If your home is located within a SFHA, what is % chance that your home will be damaged by a flood during the course of a 30-year mortgage?**

- A. 8%
- B. 15%
- C. 26%
- D. 33%



# What is the Base Flood Elevation?

- A. The flood elevation of a basement.
- B. The elevation that the 100-year flood will rise to.
- C. The elevation that the 500-year flood will rise to.
- D. The elevation that the base flood will rise to.

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A photograph of a residential street completely submerged in floodwater. Houses and trees are visible in the background, partially obscured by the water. The water appears to be quite deep, reaching up to the windows of the houses.

**Two feet of water can carry away  
most vehicles**

A. True

B. False

# Two feet of water can carry away most vehicles

A. True

B. False





# **What percent of claims are paid by the NFIP for policies outside of the 100-year floodplain?**

A. 10%

B. 15%

C. 20%

D. 25%

# What % of claims are paid by the NFIP are for policies outside of the 100-year floodplain?

A. 10%

B. 15%

C. 20%

D. 25%



# How often will the 100-Year Flood Occur?

- A. One time in 100 years.
- B. Two times in one year.
- C. In two consecutive years.
- D. Might not occur in 200 years.
- E. All of the above

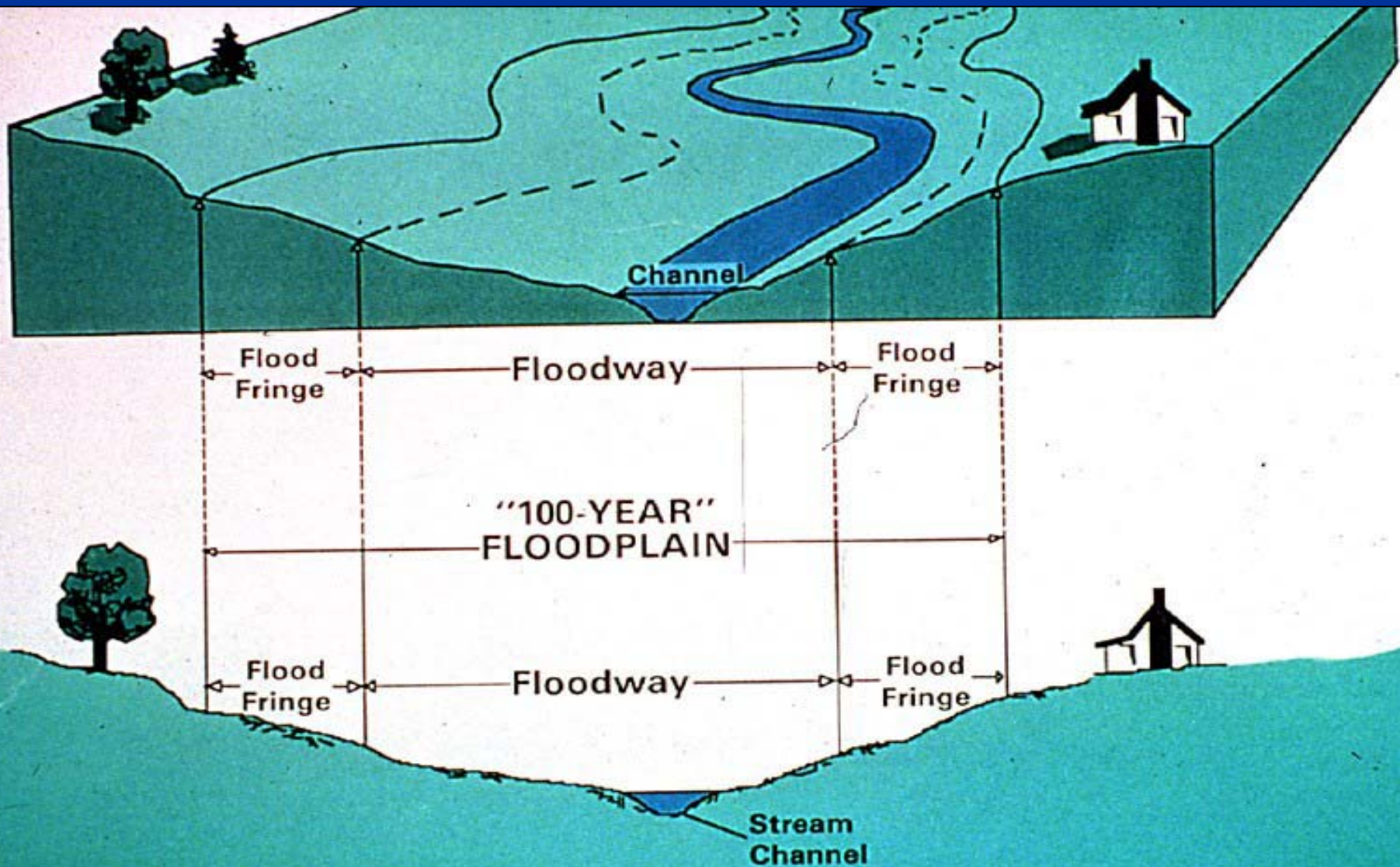
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- E. All of the above

# Benefits of a Natural Floodplain

- Flood water storage
- Enhanced stormwater management
- Reduced flood damages
- Improved water quality
- Recreational opportunities & aesthetics
- Sustained economic prosperity
- Preservation of wildlife & natural habitats
- Sustained biological productivity
- Enhanced erosion control
- Increased property values
- Preservation of cultural resources
- Maintenance of natural products

# 100-Year Floodplain





# What is a Flood?

"A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from:

# What is a Flood? *(continued)*

- Overflow of inland or tidal waters; or
- Unusual and rapid accumulation or runoff of surface waters from any source; or
- Mudflow; or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above."

# Types of Flooding

- Major Floods  
(e.g. October 2005, May 2006)
  - State and Federal involvement
- Localized Flooding
  - Minor storms
  - No State or Federal involvement



# National Flood Insurance Program (NFIP)

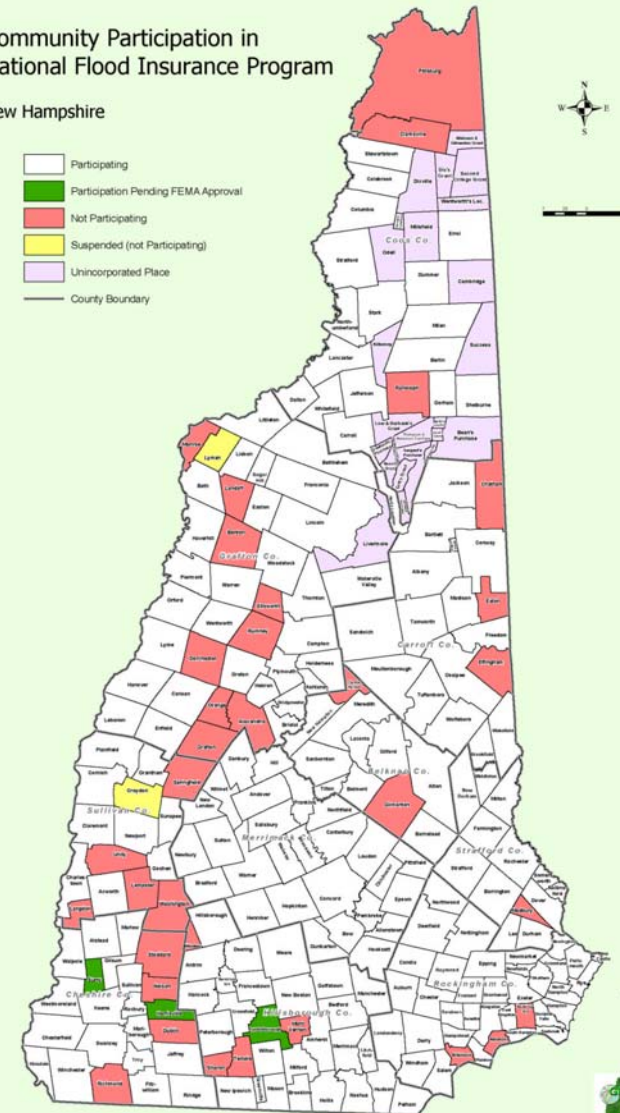
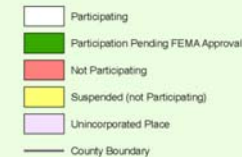
- Created in 1968
- Voluntary agreement between FEMA and a community
  - Community adopts minimum floodplain regulations
  - FEMA makes flood insurance available to all residents

# NFIP in New Hampshire

- 196 communities (83%) participate
- 39 communities (17%) do not participate
- 2 communities are suspended

Community Participation in  
National Flood Insurance Program

New Hampshire



# The 3 Parts of the NFIP

- Floodplain Regulations
- Flood Insurance
- Flood Mapping





# NFIP Minimum Regulations

- Code of Federal Regulations
- Ordinance language details how a structure has to be built in the special flood hazard area
- Subdivision and site plan review regulations language



# State Model Ordinances

- Five state model ordinances
- Type of ordinance adopted depends on type of map the community has
- Contains the minimum NFIP requirements

# Minimum NFIP Regulations

## “Better than Nothing”

- Structures built in compliance with NFIP minimum regulations are 70% less likely to be damaged by a flood
- Savings of over \$1 billion/year in damages

Source: ASFPM NAI Toolkit

# NFIP Minimum Regulations “Shortfalls”

- Buildings can still suffer damage
- Does not address flood storage
- Does not specify foundation construction standards

# Flood Insurance

- Available to all residents in a participating community
- Preferred Risk Policy



**FLOODSMART.GOV**

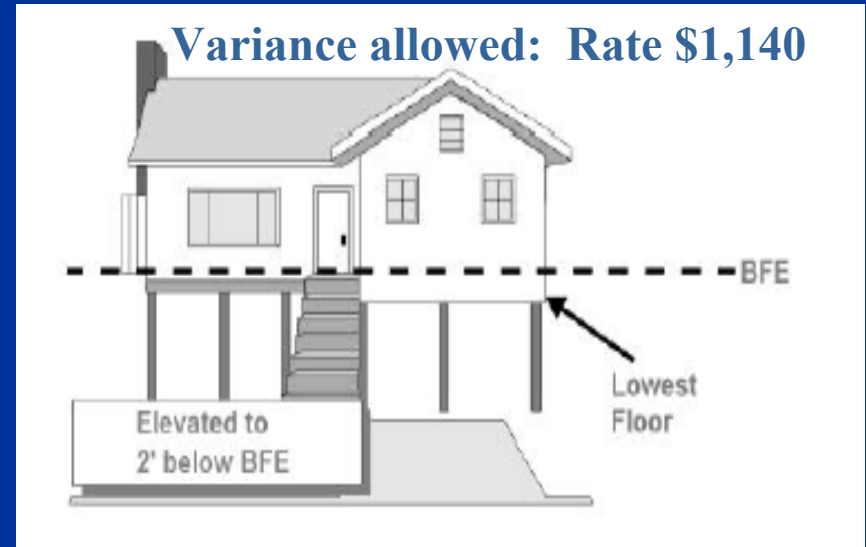
An official site of the National Flood Insurance Program

# Flood Insurance Stats – New Hampshire

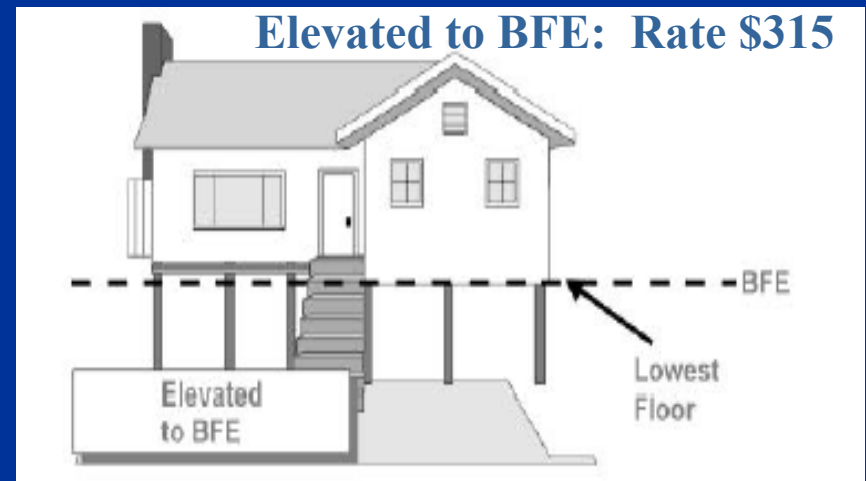
- Currently over 7,600 Policies  
(45% in Rockingham County)
  - \$1.2 million in coverage
- 1,608 Preferred Risk Policies

# Flood Insurance as it Relates to Regulations

- Building not built to regulations = very high premiums or insufficient coverage

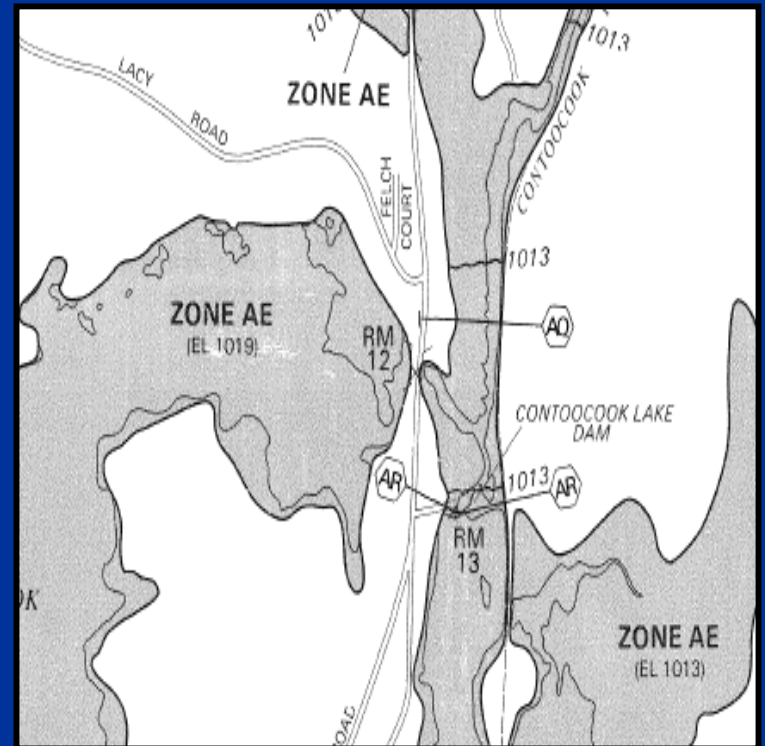


- Building built to minimum regulations or more = pay less



# Flood Maps

- Shows the areas predicted to flood during 100-year and sometimes 500-year flood events
- Zones A – inland
- Zones V – coastal



# Where Can I get a Map or Study?

- **FEMA Map Store** (for viewing, printing a FIRMette, and purchase)
- **Town Halls** (for viewing)
- **UNH GRANIT** (for on-line viewing)
- **NH Office of Energy & Planning** (for viewing and free copies, if available)

A photograph of a flooded residential area with houses and trees partially submerged in water.

# Mother Nature Doesn't Read Maps

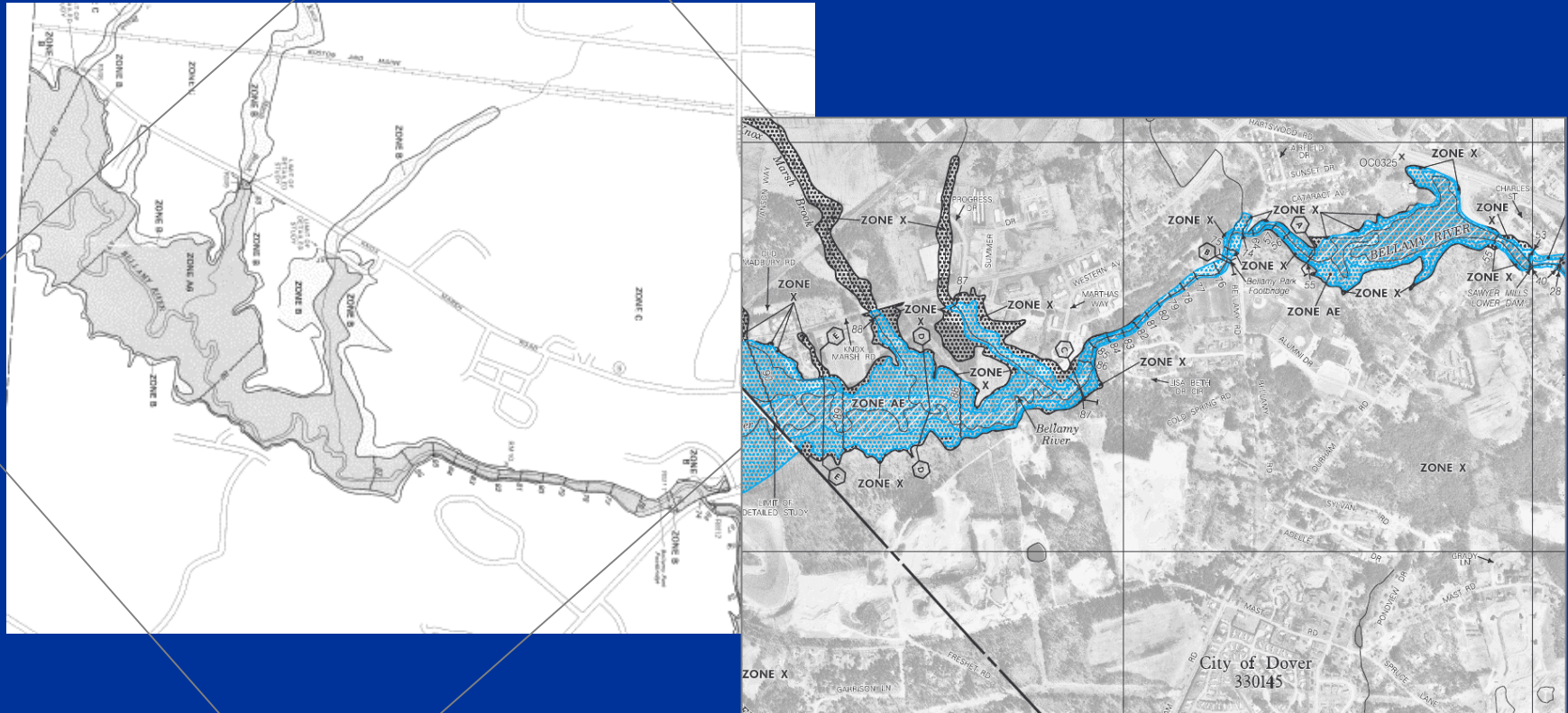
- Localized flooding can occur outside the special flood hazard areas
- 25% of claims are for areas outside the 100-year floodplain

# Map Mod in New Hampshire



- ***Effective*** DFIRMs and FIS
  - Rockingham - May 17, 2005
  - Strafford - May 17, 2005
  - Cheshire - May 23, 2006
  - Sullivan - May 23, 2006
- ***Preliminary*** DFIRMs and FIS
  - Grafton in 2007
  - Hillsborough in 2007
- ***Proposed*** DFIRMs and FIS
  - Merrimack in 2008

# Dover



# What Communities Can Do

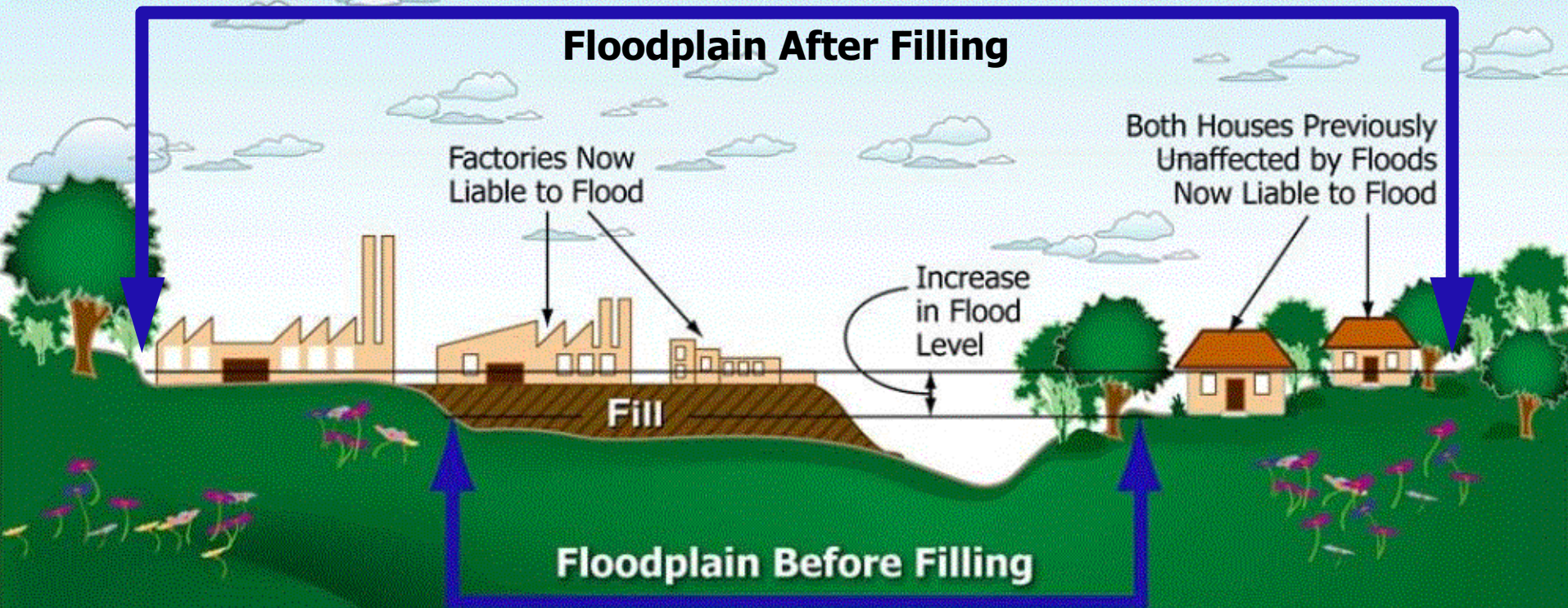
Association of State Floodplain  
Managers (ASFPM)



## **No Adverse Impact**

To address the shortcomings  
of the typical floodplain  
management program

# Today's Floodplain Is Not Necessarily Tomorrow's Floodplain



**If large areas of the floodplain are filled, then there will be an increase in the land area needed to store flood waters.  
This means your home or business may be impacted.**

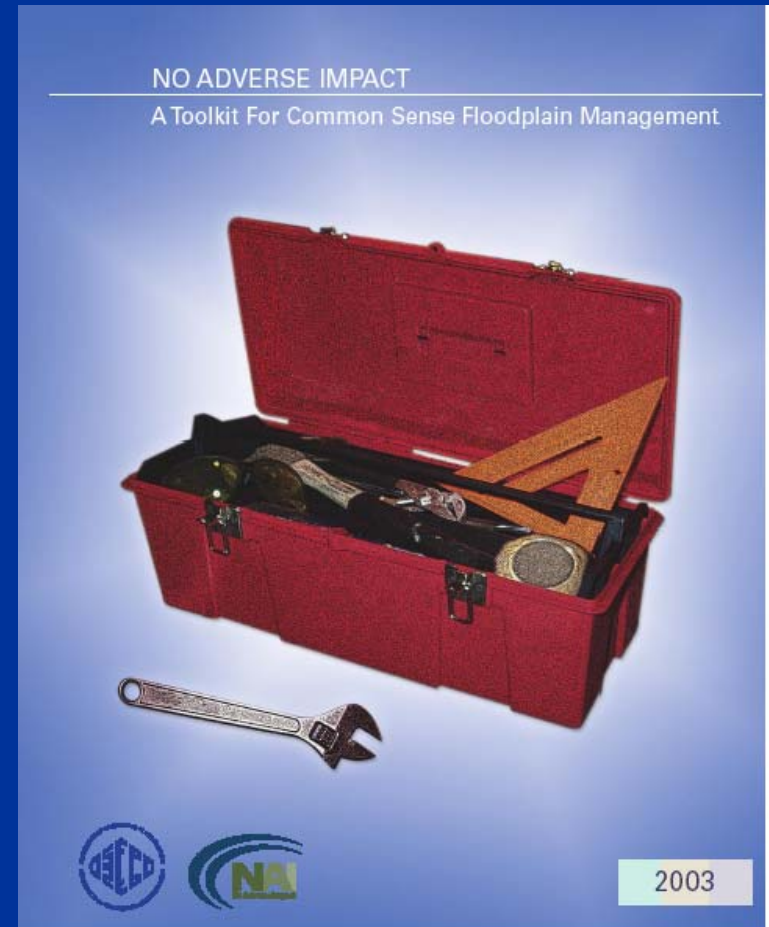


# NAI Purposes

- Provide tools for communities
- Ensure the action of any community or property owner does not adversely impact the property or rights of others
- Incorporate into a community's ongoing activities and programs

# ASFPM NAI Toolkit

- 7 Building Blocks
- 3 Levels of Effort
  - Basic
  - Better
  - NAI



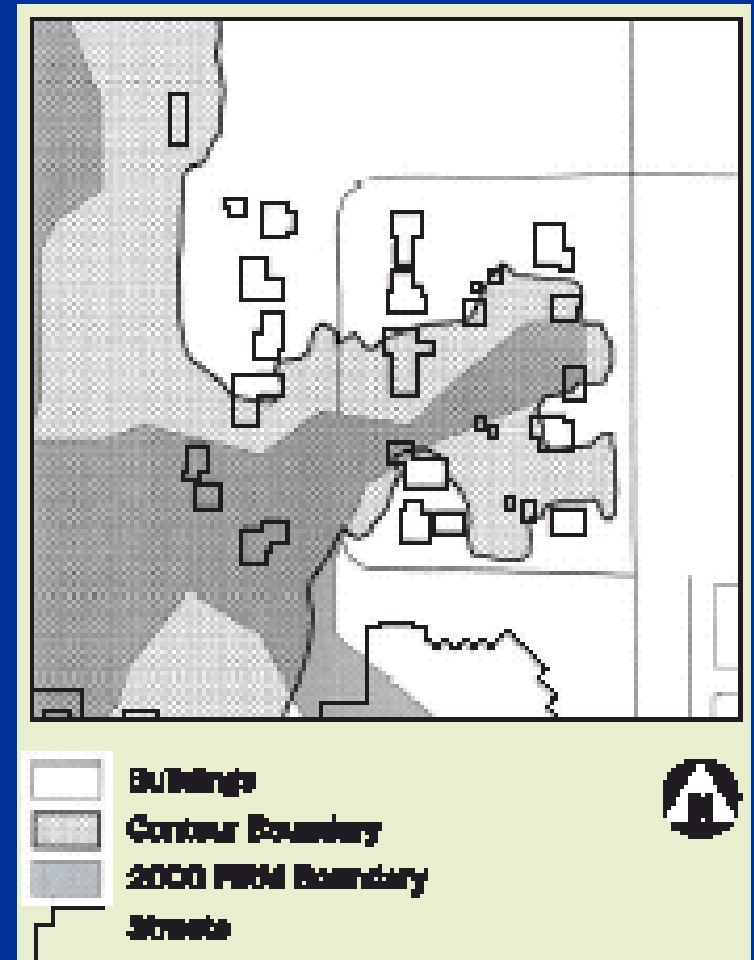


# No Adverse Impact Tools

1. Hazard Identification and Floodplain Mapping
2. Education and Outreach
3. Planning
4. Mitigation
5. Infrastructure
6. Emergency Services
7. Regulations and Development Standards

# Hazard Identification and Floodplain Mapping

- Adoption of more accurate contour map
- Use future condition hydrology to determine floodplain



# Education and Outreach

- Advertise availability of floodplain maps
- Use of GIS to determine flood zone
- Add flood information to web site
- Implement an education program
- Mail brochures to floodplain residents
- Make flood information available at town library



# Planning



## FEMA's HAZUS

- Planning tool that allows users to estimate flood depths, estimate damage and losses, and define floods of varying magnitudes for different development scenarios

# Planning

- Area Analysis
- Redevelopment



# Mitigation

- Elevation
- Relocation
- Acquisition
- Floodproofing



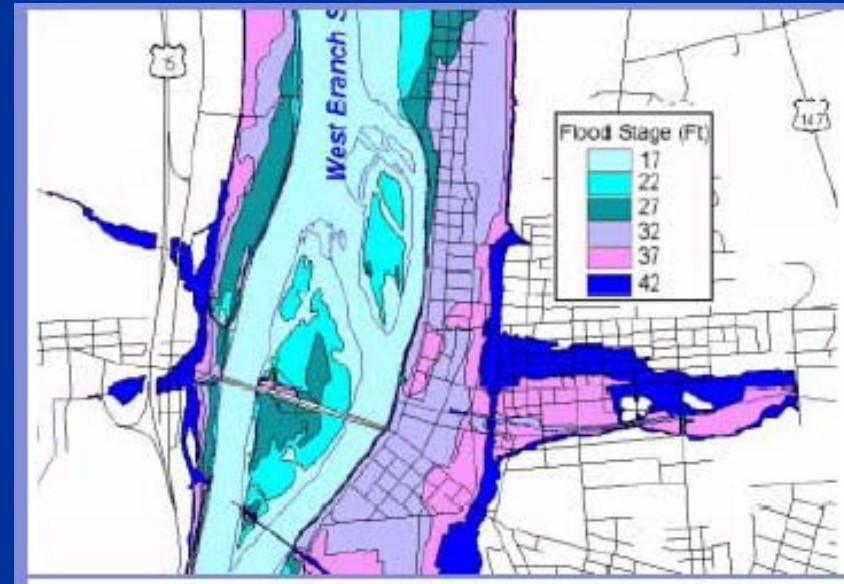
# Infrastructure

- Require bridges to pass the base flood with no increase in flood levels
- All public buildings covered by flood insurance
- Higher standards for critical facilities



# Emergency Services

- Flood warning system
- Flood preparedness plan
- Substantial damage





# **Regulations and Development Standards**

In most cases, less expensive and less disruptive for a community to prevent flood problems from occurring than to mitigate problems that already exist.



# Freeboard

Additional height requirement above the BFE that provides a margin of safety against uncertainties in floodplain modeling, future upstream development, and flood level increases due to flood fringe development.



# Benefits of Freeboard

- Reduces risk of flooding
- Accounts for some future flood increases due to upstream development
- Structures eligible for lower flood insurance premium due to lower risk



# Freeboard Example

## Town of Winchester

Ordinance requires all new construction or substantial improvement of residential and non-residential structures have the lowest floor (including basement) be elevated to at least one foot above the BFE.



# Foundation Standards

- NFIP regulations provide performance standards for anchoring new buildings and foundations, and fill placement standards for floodproofed buildings in V (coastal) zones.
- NFIP standards do not specify how building foundations are to be constructed.



# Foundation Standards

A community can require that a registered professional engineer or architect certify the adequacy of elevated building foundations and the proper placement, compaction, and protection of fill when it is used in building elevations.



# Foundation Standards

- For coastal communities, a community can require the V Zone standard for new structures in coastal AE and AH zones.
- Coastal AE are of particular concern since they are subject to wave action of up to three feet in height and the NFIP A Zone construction standards do not address this hazard.

# Enclosure Limits

Under NFIP minimum requirements, enclosures below the BFE are allowed in both inland and coastal floodplain areas as long as they meet certain design criteria

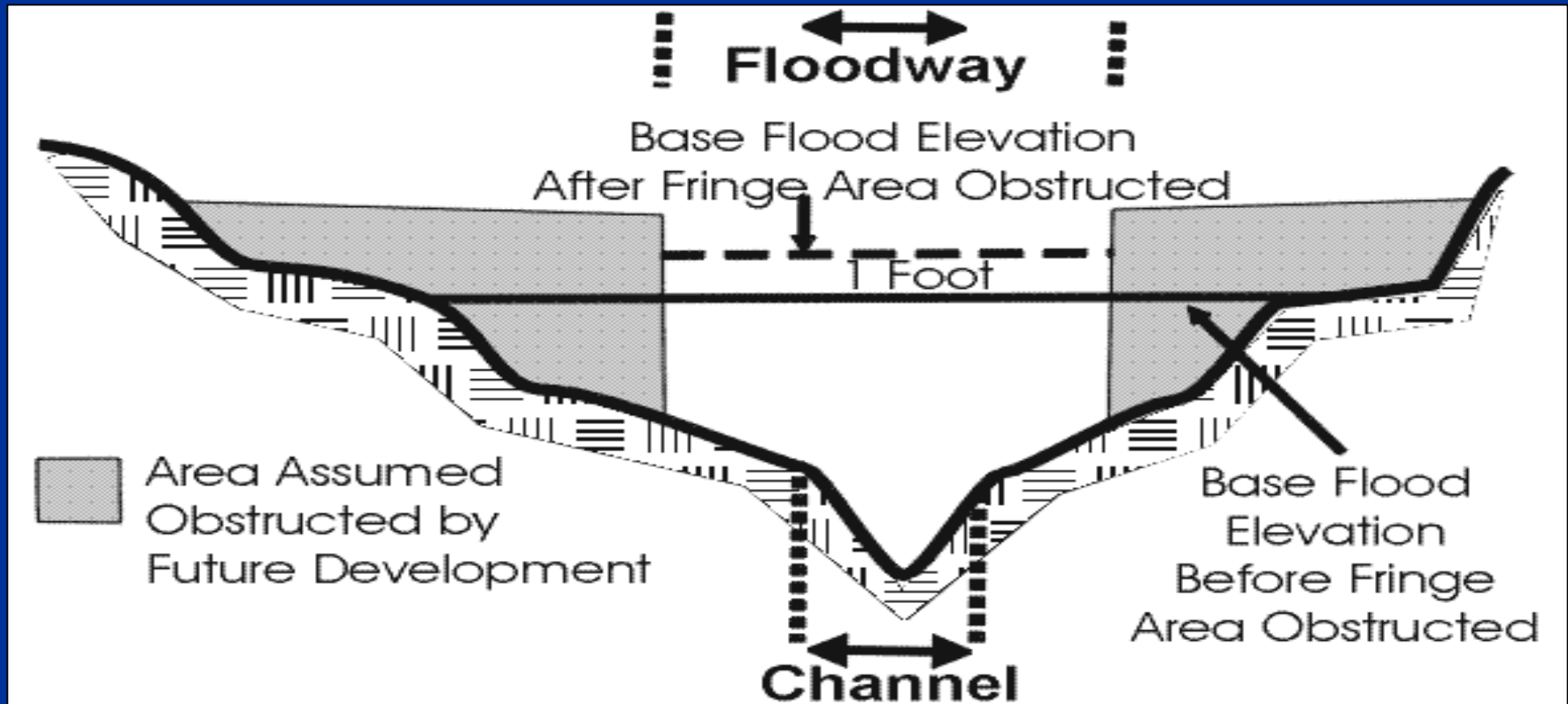




# Enclosure Limits

- A community can:
  - Prohibit any building enclosures below the BFE
  - Prohibit enclosure areas greater than 300sf below the BFE. Area must still meet opening requirements
  - Require a nonconversion agreement

# Encroachment Standards





# Encroachment Standards

- A community can require floodway mapping and encroachment studies to allow a smaller surcharge (e.g. 0.5 or 0.1 foot).
- A smaller surcharge results in a wider floodway but less potential for increased flood losses due to future development.



# Encroachment Standards

Town of Hampton prohibits any development or encroachment (including fill) within the special flood hazard area which would result in any increase in flood levels during the base flood discharge.

# Requiring BFE Data for All Development

- Under NFIP, BFE data required for developments larger than 50 lots or 5 acres.
- A community can require BFE for all development in Zone A (zones without BFEs) regardless of size.

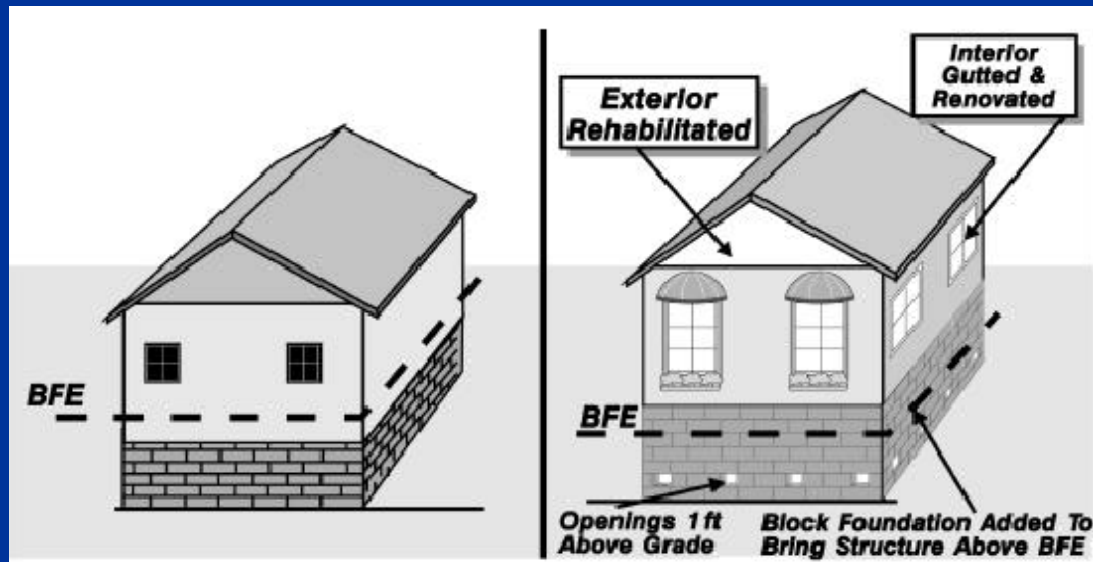
# Requiring BFE Data for All Development Example

## Town of Bedford

Requires that all development proposals include the BFE. The town defines a methodology for a floodplain determination if a BFE is not defined on the FIRM.

# Cumulative Substantial Improvements

NFIP's substantial improvement regulations allow each improvement project valued at up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements.



# Cumulative Substantial Improvements

A community can count improvements cumulatively so that when the total value of all improvements or repairs permitted over a certain period of time (5, 10, or 20 years) exceeds 50%, the original building must be protected according to the requirements for new buildings.

# Cumulative Substantial Improvements

- A community can enforce a lower threshold for substantial improvements (e.g. 30% or 40%).
- A community can require that all additions meet the building protection standards.
  - Additions outside the footprint of the original building would have to be elevated (or for non-residential structures, floodproofed) at or above the BFE.

# Limit Uses and New Development in Floodplain

- Language needs to be carefully worded to avoid taking challenge or other issues.
- A community can restrict all development from the floodway or the entire floodplain area or restrict only certain types of development such as critical facilities and residential structures.

# Limit Uses and New Development in Floodplain

- **Concord** - prohibits new residential buildings in the floodplain.
- **Easton** - restricts structures and fill in the floodplain.
- **Hanover** - prohibits any fill, new construction, substantial improvement and any other development within the floodplain (with some exceptions).

# Limit Uses and New Development in Floodplain

## Cornish

- Prohibits the placement of all new structures, buildings, dwellings, manufactured homes, and recreational vehicles (for more than 180 consecutive days) in their Regulatory Flood Plain District.
- Expansion of existing structures or use are governed as nonconforming uses and are permitted as special exception and cannot be a substantial improvement.

# Limit Uses and New Development in Floodplain

- **Swanzey and Walpole** - prohibit development in their floodplain districts except by special exception.
- **Keene** - restricts new development in the floodway.



# Manufactured Homes

- A community can prohibit placement of manufactured (mobile) homes in the floodway or flood fringe.
- *Examples* – **Swanzey and Walpole** prohibit placement of mobile home parks in their floodplain districts and no special exception shall be granted.





# Setbacks

- A community can establish a minimum distance for structures to be located from a river channel or coastal shoreline.
- Coastal – setbacks act as buffer zones against beach erosion.
- Riverine – setbacks prevent disruption to the channel banks and protect riparian habitat.



# Setbacks Examples

- **Grantham** has lot, frontage, setback and height requirements in their floodplain conservation overlay district.
- **Piermont** requires that all parts of any structure, residential, non-residential, commercial, industrial, or agricultural, including mobile homes, must be set back at least 75 feet from the 100-year floodplain boundary.

# Protection of Floodplain Storage Capacity

- Floodplains provide valuable function by storing floodwaters.
- NFIP minimum requirements allow fill and buildings to be placed in the flood fringe thereby reducing flood storage areas and causing flood heights to increase because there is nowhere for the floodwaters to go but up.

# Protection of Floodplain Storage Capacity

- Prohibit the use of fill in the floodplain
  - *Example* - Easton and Hanover prohibit any fill in the floodplain
- Require compensatory storage



# Compensatory Storage

- The developer is required to offset new fill put in the floodplain by excavating an additional floodable area to replace the lost flood storage area, preferably at “hydrologically equivalent” sites.
- In some communities, they require the developer to remove 1.5 or 2 times the amount of fill that is proposed to be placed in the flood fringe.

# Compensatory Storage Examples

- **Keene** requires applicants to provide flood storage compensation in the floodway and floodplain.
- **Salem** requires any encroachment, including fill, new construction, substantial improvement, or other development within a special flood hazard area shall provide compensatory floodplain storage equal to the amount of encroachment.

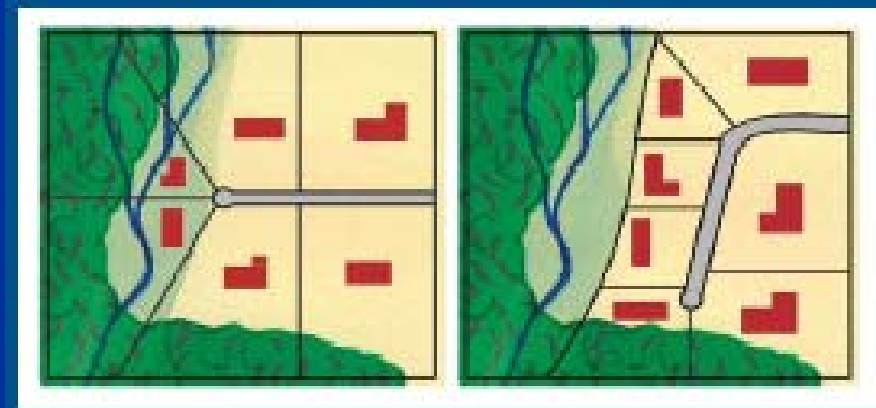


# Low Density Zoning

- A community can zone its floodplains for agricultural or other low-density use to reduce the number of new structures.
- *Example* - **Hancock** only allows certain uses (farming, forestry, nature preserve, etc.) in the floodplain.

# Other Regulatory Measures

- Cluster Subdivision
- Open Space Preservation
- Stormwater Management
- Dry Land Access



# Dry Land Access



# Flood Hazards of Special Concern

- Coastal Erosion
- Dam Breaks
- Ice Jams





# Coastal Erosion

- Special erosion rate maps are needed to regulate new construction to protect it from coastal erosion.
- Normally, 30, 60 or 100 year erosion zones are used.
- Erosion zones are generally calculated by multiplying the annual rate of erosion times the number of years of protection to be provided.

# Coastal Erosion

- All new buildings must be located landward of the 30-year erosion zone.
- All larger buildings must be located landward of the 60-year zone.
- Deeper pilings and special foundation provisions
- Traffic restricted on sand dunes and other protective features.





# **Dam Breaks**

## **Dam breach inundation area:**

The downstream area covered by the flood resulting from a dam's failure.



# Dam Breaks

- Prohibiting construction of buildings in the dam breach inundation area.
- Prohibiting siting of critical facilities in the dam breach inundation area.
- Requiring new buildings to be elevated above the BFE or the dam breach elevation, whichever is higher.
- Requiring dam owners to maintain their facilities.
- Requiring dam owners to establish warning systems if their dams are in danger of failing.



# Ice Jams

- FEMA and USACE have developed an ice jam flood study methodology.
- If a community's study follows this methodology, the community should adopt the results as their regulatory flood elevation.

# Ice Jams

- In the absence of a detailed study:
- A community should use the historic ice jam flood of record plus a foot or two of freeboard as the building protection level.





# Community Rating System

- A FEMA voluntary incentive program
- Reward communities that are doing more than meeting the NFIP requirements by reducing the flood insurance premiums of their residents by a certain percentage.



# Video

[CRS Video](#)



# CRS Activities

- Public Information Activities
  - Elevation Certificates
  - Map Information Service
  - Outreach Projects
  - Hazard Disclosure
  - Flood Protection Information
  - Flood Protection Assistance



# CRS Activities

- Mapping & Regulatory Activities
  - Additional Flood Data
  - Open Space Preservation
  - Higher Regulatory Standards
  - Flood Data Maintenance
  - Stormwater Management



# CRS Activities

- Flood Damage Reduction Activities
  - Floodplain Management Planning
  - Acquisition and Relocation
  - Flood Protection
  - Drainage System Maintenance



# CRS Activities

- Flood Preparedness Activities
  - Flood Warning Program
  - Levee Safety
  - Dam Safety

<b>Credit Points</b>	<b>CRS Class</b>	<b>Discount</b>
4,500 +	1	45%
4,000-4,499	2	40%
3,500-3,999	3	35%
3,000-3,499	4	30%
2,500-2,999	5	25%
2,000-2,499	6	20%
1,500-1,999	7	15%
1,000-1,499	8	10%
500-999	9	5%
0-499	10	0%



# NH CRS Communities

• Keene	Class 8	10%
• Marlborough	Class 9	5%
• Peterborough	Class 8	10%
• Winchester	Class 9	5%
• Rye	Class 9	5%



# Application Prerequisites

- In Regular Phase of NFIP for at least one year.
- In full compliance with the minimum requirements of the NFIP
- If there are one or more repetitive loss properties in the community, the community must take certain actions.
- Must maintain all flood insurance policies that it has been required to carry on properties owned by the community.



# Community Responsibilities

- Designate a CRS Coordinator
- Cooperate with the verification of its credited activities
- Continue to implement its activities and certify each year that it is doing so, with appropriate documentation.



# Community Responsibilities

- Advise FEMA of modifications to its activities
- Address any identified repetitive loss issues
- Maintain elevation certificates, other permit records, and old FIRMs forever
- Maintain other records of its activities until the next verification visit.



# Costs

- No fee is charged for a community to apply for CRS
- Only costs incurred are those of implementing creditable floodplain management activities and the staff time to prepare the CRS Application



# Benefits

- Reduced flood insurance rates
- CRS activities provide:
  - enhanced public safety
  - a reduction in damage to property and public infrastructure
  - avoidance of economic disruption and losses
  - reduction of human suffering
  - protection of the environment



# Benefits

- Can evaluate the effectiveness of its flood program against a nationally recognized benchmark
- Technical assistance in designing and implementing some activities is available through CRS at no charge



# Benefits

- A community's flood program benefits from having an added incentive to maintain its flood programs over the years. The elimination of a flood-related activity or a weakening of the regulatory requirements for new development could affect a community's CRS status.
- The implementation of some CRS activities can help a community qualify for certain federal assistance programs.



# Questions?

## Contact Information

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(603) 271-2155

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[www.nh.gov/oep/programs/  
floodplainmanagement/](http://www.nh.gov/oep/programs/floodplainmanagement/)